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REVIEW OF THE

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A JOURNAL OF ELECTRICAL, SCIENTIFIC AND MECHANICAL NEWS.

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What She Thinks of the Drummers.

First in the crowded car is he to offer—
This traveling man unhonored and unsung—
The seat he paid for, to some woman young,
Or old and wrinkled. He is first to proffer
Something, a trifle from his samples maybe,
To please the fancy of the crying baby.

He lifts the window and he drops the curtain
For unaccustomed hands. He lends his case
To make a bolster for a child, not certain
But its mamma will frown him in the face;
So anxiously some women seek for danger
In every courteous act of every stranger.

Well versed is he in all those ways conducive
To comfort where least comfort can be found.
His little deeds of thoughtfulness abound:
He turns the seat unasked, yet unobtrusive
Is glad to please you, or have you please him,
Yet takes it very calmly if you freeze him.

He smooths the Jove-like frown of the official
By paying the fare of one who cannot pay,
True modesty he knows from artificial:
Will flirt, of course, if you're inclined that way;
And, if you are, be sure that he detects you;
And, if you're not, be sure that he respects you.

The sorrows of the moving world distress him;
He never fails to lend what aid he can.
A thousand hearts to day have cause to bless him,
This much abused, misused commercial man.
I do not strive to cast a halo round him,
But speak of him precisely as I've found him.

ELLA WHEELER.

Telegraphic Convention.

REUNION OF "OLD TIMERS" AT THE FALLS.

The association organized two years ago at Cincinnati, and comprising those who entered the telegraphic service previous to 1863, met at Niagara Falls yesterday at the International Hotel. The attendance, though not as large as expected, was very good, especially when it was joined during the day by the members of the U. S. Military Telegraph Association. Joint and separate meetings were held, the joint meeting being for purely social purposes, so as to unite in the grand banquet and the proposed carriage ride.

Our space being limited will not permit of giving the proceedings in full or the names of those present. They were a fine body of men, and were appropiately headed by J. D. Reid, Esq., of the W. U. Tel. Co., formerly Superintendent of the old New York, Albany & Buffalo lines, as well as with other and earlier lines.

The important meeting was held in the afternoon, when a constitution and by-laws were presented by Mr. Plumb and adopted, a number of new members admitted and an organization for next year made as follows:

President—W. R. Plumb, Chicago.
Vice-President—W. B. Wilson, Lancaster, Pa.
Secretary—J. C. Mattoon, Baltimore.
Treasurer—W. S. Chapman, Chicago.

The retiring officers received a vote of thanks, which President Plumb thought was a good thing because he might want it himself some day.

The Secretary was given authority to have the constitution and by-laws and the journal of this meeting printed, together with a list of the members and their respective residences.

The annual dues were fixed at $1.

In the evening, at 9 o'clock, the banquet was ready. For this occasion Superintendent A. L. Gluck had transformed the large reception room into a banquet hall. The room had been handsomely decorated with flowers, while at the foot of the room was a magnificent pyramid of ferns, palm trees and tropical fruits and flowers. On the wall directly above the pyramid was a large panel with the words "Welcome Old Timers," worked in flowers on a green background. The table was also decorated with choice flowers and pyramids of confectionery, with a buttonhole bouquet at each plate. Shortly after nine o'clock the doors were thrown open and the "Old Timers" and the Military Telegraph Company filed into the banquet hall to the music of Wahle's Band, which played excellently throughout the evening. When the company were seated the newly elected President called upon J. D. Reid, of New York, to invoke Divine blessing. Mr. Reid afterwards made a beautiful speech, particularly eulogizing the late S. F. B. Morse "the father of the telegraph," and the late Hon. Wm. Orton, for their purity of character and true manliness. Mr. Parsons of Batavia read a poem on incidents of the work of the Military Telegraphers during the war, which was very interesting and well received. Other speeches and toasts followed and the party broke up at a reasonable hour joining hands and singing "Auld Lang Syne."

The dinner or "banquet" served by the hosts of the International, was satisfactory in every respect and surpassed anything in the way of cooking and service we have seen on a public occasion, outside of some of the best kept places in the larger cities.

The Committee, and Mr. J. W. Tillinghast especially, were thanked and cheered for the excellent arrangements made for the pleasure and comfort of the guests.

A Short Chronology of Electric Telegraphy.

BY P. H. VANDER WEYDE, M. D.

It is a sacred duty in scientific research to "give honor to whom honor is due," especially as by the recent accumulation of apparently novel facts, their brilliancy often eclipses the really more valuable discoveries of former years upon which they are based. It is sad that frequently even the names of previous great investigators and laborers in the field of scientific research are forgotten. No branch of Physics illustrates this more forcibly than electricity, which is at the same time an exposé of what can be accomplished by the accumulative efforts of many minds, when they work together in the same direction; a new generation starting from the points where a past generation had left it, and attempting to complete the scientific structure for which such solid foundations (the knowledge of stubborn facts) have been laid by former earnest and truthful workers in the field.

Every well informed person knows how, during several centuries, scores of the most ingenious men have, by assiduous investigations of electrical phenomena, discovered facts upon facts, succeeding generations standing mentally upon the shoulders of their ancestors, increasing the stock of human knowledge in that direction, until finally, a little over a century ago, the first successful letter telegraph was established by Lesage in that pioneer country of political liberty and inventive genius, Switzerland.

It can only be eminently useful to review the successive discoveries and inventions in this line of pursuit, which has culminated in the most glorious triumph of human ingenuity, the electric telegraph and telephone. It will show why many nations, Switzerland, Germany, France, England, America and even Russia all claim this invention. The fact is they all had their share in it, no single nation, and much less any single individual, can lay any other claim than having profited by the investigations of others, and perhaps sometimes added a novelty, mostly very trifling when compared with the knowledge inherited from previous searchers after nature's secrets. Tyndal truly said that the purely scientific investigators are the real workers, discoverers and inventors, of which, as a rule, patent applicants take advantage. So, for instance, Prof. Joseph Henry stands foremost in the line of those preparing the road for the establishment of the electric telegraph by Morse, who, after the voltaic batteries, the electro magnets, the reciprocating armature, the relay, the key, the conduction of the current over long wires, etc., had been invented before him by others, required scarcely to make a single step forward to perfect that what is called the Morse system of teleg-

raphy. It was Prof. Morse's good fortune that his patent claim to a combination of apparatus was backed up by a rich corporation, the Western Union, whose policy it was to establish a telegraph monopoly, as without such a support it might have become public property from the start.

We will begin with the earliest steps in electrical discoveries, which were made 2,500 years ago.

600 years B. C. Thales, of Milete, discovers that when amber is rubbed it manifests peculiar attractions and repulsions to light bodies. As amber is called electron in Greek, these manifestations were called electric.

400 B. C. Plato was the first to suggest a scientific theory for these phenomena, according to Thimeo, p. 547.

300 B. C. Theophrates Erecius discovers that a crystal of tourmalin acquires electric polarity when it is heated.

10 B. C. Plutarchus collected and described in his writings the electrical phenomena, in so far as they were known in his time.

10 A. D. Plineus did the same, with some improvements.

Now came the dark ages, which followed the first spreading of Christianity in Europe, with its corruptions and suppression of all scientific investigation as wicked and sinful, and for twelve centuries no progressive step was made.

1200. William Gilbert, of London, discovers that glass, precious stones, sulphur, wax, rosin, &c., revealed the same peculiar properties as is seen in amber or electron, and experiments also with magnets.

1235. Petrus, of Picardy, writes a treatise on magnetism, found in the Paris Library.

1690. Otto Van Guericke, of Germany, makes the first friction electric machine.

1695. Hawkesbee and Boyle do the same in England.

1728. Eti nne Gray discovers that there are certain differences between conducting and insulating substances.

1729. Gray and Wheeler, in England, transmit an electric spark over a wire several hundred feet long.

1738. Dufay, in France, makes the investigation of conduction and insulation a special study.

1740. Desaguliers defines the electric laws in regard to conduction and insulation, and his treatise on electricity receives the premium from the Academy of Bordeaux, France.

1745. Musschenbroeck, of Leyden, Holland, invents the Leyden jar, and is perfectly astonished by the severe shocks which it gives.

1746. Winkler, in Leipsic, Germany, investigates how far he can transmit currents over metallic wire.

1747. Dr. Watson transmitted signals across the Thames, through a circuit of two miles of wire, returning through two miles of earth.

1748. Dr. Franklin fired alcohol at the other side of the Schuylkill River, Philadelphia, by means of the electric spark conducted by a wire and returned by earth and the water of the river.

1750. The Abbe Nollet, of France, passes the electric current through a regiment of soldiers.

1757. Lomond, of France, communicates signals from one house to another by means of electro-copes.

1774. Lesage, of Geneva, Switzerland, establishes the first real electric telegraph of 24 wires insulated in glass tubes and glass beads, and buried in the earth, each wire connected with an electroscope and each electroscope marked with a letter. He used the earth for the return current.

1775. Volta, of Italy, invents the electrophorus.

1779. Luigi Galvani, of Bologna, Italy, finds that fresh frog's legs are good electroscopes.

1783. Volta invents the condenser.

1786. Galvani discovers animal electricity.

1787. Betancourt, Spain, constructs a line from Madrid to Aranguez, and passes charges of Leyden-jars over the same.

1794. Reusser, of Geneva, Switzerland, uses an arrangement of lines and spaces, with strips of tin-foil so that by illuminating the space by an electric spark letters and figures can be exhibited. But he uses two wires for each letter and has in all 72 wires between the two stations.

1796. Salva presents to the Academy of Madrid a plan for an electric telegraph which, according to official statements, was adopted and patronized.

1796. Volta discovers contact electricity.

1797. Cavallo gives signals by means of discharges of a battery of Leyden jars over long wires.

1800. Volta invents the pile called after him, the Voltaic pile.

1809. Soemmering, of Germany, makes a telegraph with a cable of 35 wires, each connected with a key closing the current of a Voltaic pile at one end and at the other end with a glass tube in which acidulated water was decomposed when the current was closed. Keys and glass tubes were marked with corresponding letters and figures.

1815 Schweigger, of Halle, Germany, reduces that number of wires to two, and uses a single tube. The letter is indicated by the time that the current is closed and the gas evolved, according to a signal book containing diagrams, corresponding to long and short lines, or to the dots, lines and spaces of the Morse alphabet.

1816. Dr. Cox, of Philadelphia, proposes a chemical telegraph.

1819. Oersted, of Copenhagen, makes the important discovery that the compass needle tends to place itself at right angles to the wire conducting the electric current.

1820. Schweigger, of Halle, and Poggendorf, of Berlin, discover that the effect on the needle may be greatly increased by coiling the wire around it, and the galvanometer is invented.

1820. Arago, of France, magnetized an iron bar by placing it in a long spiral coil of wire, transmitting the current, and founds the electro-magnetic theory.

1820. Oersted proposes a needle telegraph, operating on the same fundamental principle on which the receiving instruments for the Atlantic Cable messages are at present operated.

1821. Ampere experiments with such a telegraph and improves it.

1823. Ronaldi, of England, erects eight miles of electric telegraph wire, well insulated, a clock at each end. These clocks are so regulated that they move synchronously the hands over the dials which carry the letters; the moment the hands reached the desired letter an electric signal was transmitted. It was a success, and he offered his invention to the British Government, but it was rejected. A government clerk wrote him that he was directed by his Excellency the Secretary of State, to inform the applicant that a telegraph was of no use whatever in time of peace, and that the established system of visible signals was quite sufficient in time of war.

N.B.—The British Secretary of State has changed his mind since that time.

1825. Sturgeon, of London, coils a copper wire around a soft iron horseshoe, and by passing an electric current he made it magnetic enough to attract an armature charged with a resistance of 9 pounds. He invented thus the electro-magnet, later applied by Morse in his telegraph register, relay and sounder.

1827. Ohm, of Berlin, establishes the mathematical laws governing electric currents, and does for electricity what Newton had done for gravitation.

1827. Harrison G. Dyer, of New York City, made signals over a wire two miles long by discoloring moist test paper by the electric current, and thus laid the basis on which later the Bain telegraph and at present the rapid telegraph is operated.

1827. Prof. Dana, exhibits in the New York Athenæum Sturgeon's electro-magnet, and shows how the opening and closing of the battery current will cause the falling and restoring of the iron armature, in fact he operated a sounder. P. S.—Prof. Morse, then an artist portrait-painter, was present at the lecture.

1828. Prof. Moll, of Holland, makes an electro-magnet, lifting and dropping 135 pounds' weight, in order to prove that electro-magnets can surpass permanent steel magnets in their power of attraction.

1829. Prof. Henry, of Princeton, proves that an electro-magnet may be charged over great distances by means of long wires.

1830. Prof. Henry produces an electro-magnet of great power, lifting more than a ton weight.

1831. Prof. Henry devises the first reciprocating magnet, vibrating armature and relay magnet; all indispensable in the Morse system.

1832. Prof. Morse, of New York claims that he worked out the general plan of his telegraph, and prepares the apparatus to test it.

1834. Weber and Gauss establish an electro-magnetic telegraph in Goettingen, and use it for the purpose of scientific communication between the occupants of the physical cabinet in the university and the distant observatory.

1835. Prof. Morse applies the relay of Prof. Henry to telegraphy.

1836. Daniell, of London, invents the constant sulphate of copper battery with porous cells named after him the Daniell battery

1836. Shilling, of Heidelberg, Germany, constructs and operates the needle telegraph proposed by Oersted, in 1820. It is seen by Cook, of England, who conceived improvements upon it.

1837. Cook brings out with Wheatstone a needle telegraph consisting of 3 compass needles with 3 coils, and 5 or 6 conducting wires.

1837. Cook and Davenport construct an electro-magnetic motor.

1837. Jacobi, of Petersburg, propels a boat on the river Neva by an electro-magnetic engine.

1837. Grove, of London, invents the platinum and nitric acid battery with porous cells, named after him the Grove Battery.

1837. Steinheit, of Munich, dispenses with the return-current wire by burrying a large copper ground plate at each station, and connecting the circuit wire with the same.

1837. Oct. 3, Prof. Morse filed his first caveat in the United States Patent Office.

1838. Prof. Vorselman de Heer, of Deventer, Holland, invents an electro-physiological telegraph, consisting of a conductor, key-board with eight keys, each connected with a wire; by placing eight fingers on these keys 28 different signals may be received by feeling the current pass through two of the fingers, each signal corresponding to a letter in the alphabet according to a diagram in front of the operator. This arrangement was never introduced, being objected to by the operators at the receiving station who did not like it.

1838, April 7. Prof. Morse makes his first application for patent.

1839. F. Coombs builds an electric telegraph on the principle of the modern hotel annunciator, with 36 wires for 26 letters and 10 figures, and obtains the first premium at the New York exhibition.

1840, F. Coombs exhibits his electro-magnetic telegraph, and small electro-magnetic locomotive on circular railroad track in actual operation, in Washington, D. C. (See *National Intelligence* for January 28, 1840.)

1840, June. Patent to Prof. Morse issued for his electro-magnetic telegraph.

1840. Joule, of England, constructs peculiarly shaped etectro-magnets of great attractive power.

1842. Bunsen, of Heidelberg, invents the carbon battery.

1844. First telegraph in the United States in operation between Washington and Baltimore, under Morse's patent. The United States did not accept the offer of the patent made by Morse, but did, at least, more than England had done 20 years before; while refusing the offer, Congress made an appropriation amply sufficient to pay the expenses for testing the invention. It is, however, whispered about that this was not done out of love for scientific progress, but that the measure was carried through by dexterous lobbying.

Electric Lighting by Batteries.

A very important installation of the electric light fed from voltaic batteries has been made at the Comtoir d'Escompte, Paris. Owing to the number of valuable documents in the establishment, the presence of a steam engine was considered dangerous on account of fire; and land and property rights were too exclusive to admit of recourse being had to a generating station in the neighborhood. The engineer, M. Corroyer, therefore fell back on the single-fluid bichromate of soda battery for the source of current. The liquid is in constant circulation through the cells and air is blown into them to maintain their power. The form of battery adopted was devised by M. Grenet, in 1857, and recently improved by M. Jarriant. The cells are stored in the garret of the edifice Each battery consists of 48 elements in two sets of 24 each. The solution is composed of 38 kilogrammes of bichromate of soda and 75 kilogrammes of sulphuric acid at 66 deg. combined with water to make up a cubic meter of liquid. The bichromate of soda is preferred to the bichromate of potash owing to the higher price of the latter. The negative plate consists of four plates of carbon plunged into a rectangular vessel and connected by a leaden top-piece or head. On this head are fixed two little ebonite tubes which plunge to the bottom of the trough and serve to blow into the liquid, thereby stirring it and assisting the depolarization of the plates. The produce pole consists of six rods of zinc bound into a sheaf round a central electrode, and plunging into a chamber of caoutchouc containing mercury which amalgamates them The zincs are so mounted that they can be raised or lowered at will, so as to put the battery in or out of action.

The cells are joined up together by proper connections. The liquid is distributed to the cells from a common reservoir by means of pipes, which fill a row of ebonite measures by a stopcock at the will of the attendant. When these measures are filled to a certain amount they tilt up automatically, and each empties itself by an ebonite funnel into the lower part of the cell below. At the same time the solution to a like amount overflows from the top of the cell and runs off as waste liquid into another reservoir. This liquid can be restored to its old strength; but it can be used over and over again before this process is necessary. The air blown into the cells is supplied by the pneumatic apparatus already in the building. The compressed air serves both for the dispatch of messages and the insufflation of the elements. By these means a constant current is maintained in the battery suitable for electric lighting. The electromotive force of each s t of 48 cells is 82 volts, and the intensity of current on short circuit is 24 amperes. MM. Jarriant and Grenet estimate that each battery in full working order is equivalent to a horse power and a half of electric energy, or 112 kilogrammeters per second. The lamps employed are those of Siemens, Gravier and Swan, according as they are best adapted for the department of the building. The cost of the installation is not yet known.

A New York man, desiring to commit suicide, shot at himself four times without hitting. He will probably be given a position on the American rifle team in the next international shooting match.

Edison's Suit Against the Maxim Lamp for Infringement. Paris.

The suit brought at Paris, France, by the Edison Company against Hiram S. Maxim, for infringing Edison's incandescent electric light patents, has been noted for trial, and we are instructed that the trial will take place in November. The management of the suit in behalf of the Edison patents is conducted by MM. Pouillet and Oscar Falerteuf, avocats; M. Goirin, avoué; and M. Armengaud, patent counsel and expert. Additional experts, prominent in scientific circles, have also been retained.

The president of the British Association for the Advancement of Science this year—Dr. Charles William Siemens—is not a native of Great Britain. When he was nineteen years of age he arrived in England with a stout heart, but with little or no money. He took with him from Germany some improvements in the methods of electro-plating, and a Birmingham firm taking hold of them he received his first substantial start in life. The present, or the fifty-second, meeting of the association, at Southampton, is not very likely to stand high in the annals of the organization. Yet the attendance was good and much solid work was reviewed. Year by year the trouble with the meetings is that the papers read by members simply sum up what had appeared from their own pens in special magazines, or in the papers published under the authority or direct supervision of various scientific bodies. The "memoirs" have too stale a flavor for the most part in this age, which demands early publicity for any important work.

Testimonial from W. H. Preece.

Mr. W. H. Preece, F. R. S , the engineer of the British Postal Telegraph, and Commissioner of the English Government at the Paris Electrical Exposition, has written the following letter to Mr. Arnold White, Secretary of the Edison Company, London, regarding the plant installed in the House of Assembly, Cape Town, Cape of Good Hope, mentioned in the twelfth *Bulletin*:

"DEAR SIR,—You are aware that the Cape Government decided upon applying the electric light to their House of Assembly, and after an unsuccessful trial of the arc system, they instructed me to send out the best incandescent system. I selected the Edison one The house was lit up on May 11th, and Mr. Sirewright, the general manager of telegraphy in the Cape, writes: 'The electric light in our House of Assembly has been a perfect success. Everything has gone off capitally, and from the day that the light was first started there has been no hitch of any kind.' I am sure this will be satisfactory to your Directors. Yours faithfully,

W. H. PREECE."

Edison Factory in France.

Owing to the fact that under the French patent laws, lamps, dynamos, meters, and all other apparatus constituting the Edison system and covered by Edison's French patents, must be manufactured in France, there has necessarily been some delay in starting this light in that country, pending the equipment and starting of factories. The European Company's factory at Ivry-sur-Seine, however, is now finished, and Mr. Batchelor has commeced to turn out dynamos, lamps, etc. Consequently the French Company has now begun to install plants in Paris, as well as elsewhere in France. The following account of the factory is taken from the London *Electrician*, August 12th:

"The Edison Company have now completed the establishment of a factory for the manufacture of their dynamos, lamps, etc., in Paris. Owing to the laws of the country, it was absolutely necessary to establish a factory where everything appertaining to the system could be manufactured, as if any foreign article is imported into France and sold, the patents obtained for it become void in that country. This obstacle to the introduction of the Edison system has now, however, been surmounted, and we are informed that several plants are being laid down in different parts of the country. The factory, as established, consists of three principal departments: First, the machine works, where the dynamo machines, resistance boxes for the regulation of the magnetic field, together with all the necessary lamp fixtures are made. Second, the lamp factory, which consists of the glass department, where all the glass parts of the lamp is made; the fibre room, where the fibres are cut and finished, which, when carbonized, make the carbons for the lamp; the clamp room, where the clamps which hold the carbons in the lamp are made; the plating room, where the carbons are plated on to the clamp, so as to insure good contact; the pump room, where the air is exhausted from the globes; and lastly, the testing room, where all lamps are tested and marked. Third, the electric tube works, where all the underground mains are made, together with the junction boxes, safety boxes, etc. The lamp factory at present has a capacity for turning out 1,000 lamps per day. There are over 300 men employed at the works. Mr. Batchelor is manager, and is assisted in the machine works by Mr. D. Cunningham, who was master mechanic at the Edison machine works in New York."

The British Cable King.

Mr. John Pender, M. P., who arrived on the Scythia, has not visited America before since 1847, and as he says he must be back in England about the 24th of October for the opening of Parliament, it is evident that he cannot linger long in New York, since it is his purpose to make a trip to Yellowstone National Park. He has so long been associated with the telegraph that it seems to have become a habit with him to do everything at telegraph speed. It would be gratifying to his American friends if the power of this habit could be broken while he is traveling in this country.

It is interesting to look back over the history of the telegraph during the thirty-five years since Mr. Pender first visited the United States. It was but three years before his arrival that, on May 27th, 1844, the first practical use of the telegraph was made, over a wire from Washington to Baltimore. But so rapid has been its growth since then that almost every community in the civilized world is now daily dependent upon it for the transmission of intelligence. It was eleven years after Mr. Pender's first visit here that, in August, 1858, the first communication by submarine cable between the New World and the Old was effected, but Mr. Pender now estimates that nine-tenths of the commerce of the world is conducted by submarine cables, and the amount of capital invested in them is about $150,000,000. It must be the source of the highest satisfaction to him, as he stands again upon American soil, to remember that his invaluable aid in the execution of the scheme of an Atlantic cable has contributed to results of such magnitude.

But Mr. Pender regards electricity as yet in its infancy, and although the earth is covered with a network of telegraph wires, he predicts the establishment of a universal telegraph system. As he is president of the Eastern Telegraph Company and the Eastern Extension Telegraph Company, chairman of the Direct United States Cable Company, and the greatest owner of telegraph stocks in England, his views as to improvements in the telegraph system have great weight.

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In our report of the convention, we omitted to state that Mr. F. G. Beach, the General Superintendent of the Central Telephone Company of Chicago, Ill., was elected Treasurer of the National Telephone Association. Mr. Beach is one of the oldest and ablest men in the telephone field. He built for the Western Union Telephone Company several of the first Edison Exchanges constructed in the West.

Laying a Kerite Cable.

The Baltimore and Ohio Telegraph Company laid a cable across the Narrows from Fort Wadsworth to Fort Hamilton, yesterday morning. A crossing so far down the Bay was selected to avoid the dangers of breakage or interrupted communication by ships dragging their anchors in stormy weather. The water at this point is very deep and it is rarely or ever used by vessels as an anchorage. The tug-boat Reba, having in tow a scow that carried the cable, started from the pier at Fort Hamilton and steamed across the bay. Among the passengers were, R. Stewart, superintendent of the Baltimore and Ohio Telegraph Company; C. W. Price, the New York manager; J. C. Haskinson, one of the road surveyors; Thomas T. Church, an old telegraph operator, and C. B. Hotchkiss, the General Manager and Agent for the manufacturer of the cable. In the center of the scow, coiled up on a large reel, was the cable, 6,500 feet in length and weighing 36,000 lbs. It contained seven copper conductors, covered with Kerite. The seven wires have been bound together and encased in an armor of galvanized iron of the standard English No. 3 and American No. 2.

The cable was manufactured by the Kerite Company at its works in Seymour, Conn. It is 2¼ inches in diameter, and is the largest cable ever manufactured in this country. In comparison with English cables the insulation is heavier. Before landing the shore end the cable was tested by Mr. Price, for the Telegraph Company, and pronounced in good order. At 10:30 the shore end on the Staten Island side was made secure, and the word was given to start. For the first 1,000 feet the wire was run out slowly, but as it became apparent that everything was in good working order the speed was increased, and in twenty-five minutes the crossing was made. Men stood by with water to prevent fire by friction, but their services were scarcely required, and the laying of the cable was pronounced a complete success. Some delay was occasioned in making fast the Long Island shore end, because of the lowness of the tide, but by 1 o'clock everything was finished and communication between the two shores was established.

The cable was laid under the direction of John Clark, who is a veteran in the service, most of the cables in this country having been laid under his instructions. Two smaller cables are to be laid, one between Tottenville and Perth Amboy, and the other between Perth Amboy and South Amboy. The line will then be complete to within a few miles of Philadelphia, and by October 15 the line is expected to be in operation. The B. & O. are to be congratulated for selecting so old and well known a manufacturer of cables. New companies, as a rule, are too much inclined to cheapness rather than reputation and durability.

The American Institute.

OPENING OF ITS ANNUAL FAIR.

The fifty-first annual exhibition of the American Institute was opened with addresses by Hon. Nathan C. Ely, the President, and Hosea Perkins, Esq. The Ninth Regiment Band was in attendance, as it will be every afternoon and evening during the fair.

Colonel Charles Wager Hull, the General Manager, assures us that it bids fair to be one of the largest and most interesting exhibitions held here for many years. Its management is in excellent hands which will insure success. There are some interesting electrical exhibits of which we shall speak hereafter.

A Few Words of Advice.

As the highest hopes of our ever-growing profession, in all its branches, are centered in our young men, and based upon their proper training, the chief aim of THE REVIEW has been, and is, to provide them with a journal devoid of cantankerous abuse, pure in tone, and unswayed by personal feeling. In following this course we have endeavored to avoid any controversy with others who, whatever may be reprehensible in their methods, are doubtless earnest and honest in pursuing a purpose similar to our own. But, while old and experienced telegraphers cannot be misled by unfounded, thoughtless or vicious statements made in print, it is due to common justice and a proper regard for the welfare of the telegraphic profession that whenever insidious influences tending to undermine the very foundation of its prosperity may be detected, they should be pointed out, and at least explained to the less experienced in the fraternity.

The recent trouble among the operators at Denver has led a telegraphic journal, published in this city, to print some ill-advised criticisms upon the officers of the Western Union Company, as well as a most unjust assault upon the personal character of the Assistant Superintendent and Manager at Denver, Mr. B. R. Bates. Our esteemed contemporary printed a reckless charge, made anonymously, that Mr. Bates had enticed a young consumptive (Mr. E. J. Corrigan) out to Denver, promising to pay him $75 per month as an operator, and that, when Mr. Corrigan went thither, Mr. Bates would pay him only $65 per month. It seems that Mr. Corrigan wrote promptly to the journal in question, denying these assertions, and added that, "After working only five days, I was prostrated by a severe illness, and was making arrangements to go to one of the hospitals; but Mr. Bates would not hear of it, and insisted on his accepting the hospitalities of his (Mr. Bates's) own house, where," adds Mr. Corrigan, "I spent the pleasantest days of my stay in Denver."

This explicit refutation of the statement (to which our contemporary might have added a retraction), instead of being published in full, was "cut" in the most gingerly manner, and actually printed under a caption foreign to its context, thus withholding a just vindication from a most estimable and amiable young official. This is, surely, the kind of "journalism" against which we should be protected—that which, unblushingly, prints a damaging story against an innocent man, and then leaves the victim either to rest under the stigma or neglect his everyday work and run from pillar to post in search of evidence to disprove what has been printed.

As a matter of fact, Mr. Bates has always been an exceedingly popular operator, and is now a considerate and conscientious official. A close investigation has shown us that he has really done more for the men at Denver than any other manager has ever done before, and if the following figures are not correct, we will gladly publish a revised statement: When Mr. Bates took charge of the Denver office, in June, 1881, the average salary of the operators was $68; one year thereafter, in June, 1882, it was $73, an average increase of $5 per man. At the same time the average salary of the clerks had risen from $40 to $54; that of the office boys from $15 to $20, and that of the messengers from $15 to $18—all within a twelvemonth.

It seems to us to be a grave mistake to teach the junior members of the profession that all, or nearly all, their grievances are the fault of those placed over them in authority. Experience seems to teach

that a rising young man—that is, one who, by his own honesty, skill and industry has placed himself well on for the foremost rank of his calling—will suffer infinitely more from the petty jealousy and bickerings of his co-workers than from the loudly proclaimed "oppression" of his superior officers.

What telegraphers most need now are cheerfulness, hard-headed reason and a thoughtful appreciation of the vital fact that if any improvement is to be made in the standing of those employed, it can be better accomplished by a hearty co-operation between employer and employé than by a noisy and sometimes indecent abuse of the officials.

An exhibition for the purpose of developing the economic and general application of electricity for daily requirements, is to be held at the Royal Aquarium, Westminster, from the 1st of November to the 1st of March. The space allotted to each exhibitor will be so limited as to admit of a large number being represented at comparatively small cost.

At a meeting of the Executive Committee of the New York Electrical Society, held at the Society rooms, Sept. 16th, Messrs. A. B. Chandler, of the Fuller Electric Light Co., and G. M. Phelps, of Western Electric Manufacturing Co., were elected to fill vacancies on the Committee. On motion of H. W. Pope, it was ordered that a Journal be issued January 1st, 1883, to contain the lectures delivered before the Society, and that the Secretary inform those who have or may hereafter deliver lectures or read papers before the Society, to properly arrange them for publication in such Journal.

Mr. Pope, Chairman of Committee on furnishing room, etc., reported having collected $462.50, and expended $432.86. Mr. David Brooks, of Philadelphia, will lecture before the Society, October 6th, at 8 P. M. The following papers are now regularly received and on file at the Society rooms:

L'Electrician, Paris.
Engineering, London.
The *Electrician*, London.
The *Operator*, New York.
The *Electrician*, New York.
La Lumiere Electrique, Paris.
The *Electrical Review*, London.
Scientific American, New York.
TELEGRAPH AND TELEPHONE REVIEW, New York.

The fact that the French Academy limits its membership to forty living "immortals" makes an election to that body an extremely high honor; but, as a contemporary has well said, Westminster Abbey is more select still and deals only with the dead. Admission at its doors is the highest distinction that can be bestowed upon departed worthies, and, if any of its space is more sacred than the others, it is the Poets' Corner, in which it is now almost certain that a monument to Longfellow will be placed. Among the intellectual sovereigns who have wielded a potent sway over the hearts of men, he is certainly entitled to a place, and the erection in Westminster Abbey of a tablet bearing his name will be a graceful tribute to his genius, which will draw England and the United States into a closer union.

The Resistance of Carbon.

In the course of his paper on "Recent Progress in Telephony," read before the British Association meeting at Southampton, Mr. Preece remarks, when speaking of carbon: "It has the remarkable property of having its resistance lowered when it is heated—the reverse of metals. This observation is due to Mr. Shelford Bidwell." It is rather to be regretted that Mr. Preece did not give the date of Mr. Bidwell's discovery, more especially as Mr. S. A. Varley had entered very fully into this matter in a paper, also read before the British Association, in 1870.

Asbestos as an Insulator.

The attention of electricians has recently been called to asbestos as an insulator, and M. H. Geoffroy has brought before the French Academy of Sciences a specimen of electric lighting wire which appears to answer the purpose of preventing fires. It consists of copper wire insulated with asbestos and threaded through a lead pipe. According to experiments made at Paris by M. Henri Lippmann, engineer to the Faure Electric Accumulator Company, a specimen of the conductor of this wire was entirely volatilized by powerful currents without the leaden pipe being affected. The volatilization takes place in a mere fraction of a second, and the lead does not begin to fuse. Moreover, the asbestos acts as a good insulator for ordinary currents.

Electricity in French Lighthouses.

A recent law of the French Legislature authorized the application of the electric light in no fewer than 42 important lighthouses on the coasts of France. The total expense of this change is estimated at about £320,000 sterling.

In Europe electric railways are growing rapidly in public estimation, not only on the Continent, but in Great Britain. Already 100 miles of electric transit are in operation, and there is every probability of the total mileage being consideraby increased before the end of the present year.

The question regarding the degree of foreign admixtures in our population is settled by a recent publication of the Census Bureau. Of our fifty millions and more of people in 1880, Great Britain and Ireland can only claim the nativity of 2,772,169, and Germany of 1,966,742, while Canada had given us 717,084; Norway, 194,337; Sweden, 181,729; France, 106,971; and China, 104,541. Thus no foreign country could claim by nativity as much as one-eighteenth part of the population of America, and all foreign countries combined did not have as much as one in seven.

Death of a French Inventor.

PARIS, September 27.—M. Leclanche, inventor of the Leclanche electric pile and other improvements in electricity, is dead. He invented the battery used very extensively by Telephone Exchanges, which all are familiar with.

Veteran Telegraphers.

ANNUAL MEETING OF THE SOCIETY OF THE UNITED STATES MILITARY TELEGRAPHIC CORPS.

The first annual meeting of the society of the United States Military Telegraph Corps, composed of men who were in the service of the Government during the rebellion, was held at the International Hotel, Niagara Falls, yesterday afternoon: the president, W. R. Plumb, of Chicago in the chair. The members present were: C. Dwyer, Omaha; Samuel R. Gilmore, New York; Jesse H. Bunnell, New York; Martin Brattle, Gallatin, Tenn.; E. C. Boyle, Rochester; P. J. Murray, Jackson, Tenn.; George J. Goulding, Erie, Pa.; S. J. Kelly, Painesville, O.; W. H. Parsons, Batavia; S. L. Robinson, Chicago; Sol. Palmer, St. Louis; G. W. Baxter, Erie, Pa.; Joseph Anderson, Buffalo; E. P. Whitford, Chicago; George Stillman, Dunkirk, N. Y.; L. D. Parker, Chicago; George A. Burnett, Buffalo; S. M. Painter, San Francisco; W. B. Wilson, Lancaster, Pa.; Geo. Cole, Columbus, O.; C. D. Hammond, Albany; O. H. Dorrance, Wallace, Kansas; T. A. Laird, Buffalo; J. E. Pettit, Chicago; William R. Plumb, Chicago; L. D. McCandless, Allegheny City, Pa.; J. H. Nichols, Denver, Col.

As to the objects of the organization and of this meeting it is indicated in the following preamble from the constitution and by-laws, and which was substantially the scope of the remarks made by the president upon calling the society to order:

"About sixteen years ago the United States military telegraph corps was dismissed the service, in the main, unhonored and unthanked. In that time societies have been organized by survivors of the various armies to perpetuate the history of their respective services, the memory of their gallant dead, and for the pleasures of social reunions. The military telegrapher has long felt that these objects alone required like organization, but a growing conviction that the corps that constructed and operated over 15,000 miles of military lines in times and places of extraordinary danger; that forwarded millions of telegrams to supply, recruit, and move the federal armies, thus alone making success certain and the consummation speedy, has been grievously overlooked by the Government it supported so strongly, demands organization to secure such just recognition as may seem proper. Therefore, to the end that the several objects above indicated, and such other kindred purpose as may from time to time seem proper, this constitution is ratified and approved."

The first order of business was to take action upon the record of the proceedings had when the society was first organized at Chicago, which was read by the secretary, J. B. Pettit of Chicago, and approved.

New members were proposed and elected as follows: O. H. Booth, Mansfield, O.; C. D. Hammond, Albany; Jesse H. Bunnell, New York; George Stillman, Dunkirk; George W. Baxter, Erie, Pa.: Joseph Snell, jr., Binghamton, N. Y.; E. C. Boyle, Rochester; Charles H. Palmer, Jefferson City, Mo.; William B. Wilson, Lancaster, Pa.

C. J. Dwyer of Omaha reported what had been done in his district toward the organization of a division of this society, giving the names of its charter members and presenting a copy of its constitution and by-laws.

The following preamble and resolutions were offered by L. D. Parker, of Chicago, and unanimously adopted:

Whereas, The telegraph operators, builders and repairers, who, under the direction of commissioned officers, erected, repaired and operated during the war of the rebellion, over 15,000 miles of new line in a country beset with armed enemies, and rebuilt or repaired and operated many thousand miles of old line, by reason of all which the vast armies of the Union located from the seaboard to New Mexico, and their many dependent posts were kept in constant and almost instantaneous communication, thus making co-operative movements possible on a scale never before attempted; and

Whereas, To the saving of large details of soldiers for courier service, the innumerable wants and necessities of the soldiers in the field were made known and acknowledged by the 6,500,000 telegrams transmitted by the military telegraphers and distant commanders, and the people were kept better advised of the progress of events than any nation ever was in any other war; and

Whereas, In doing these things which alone enabled the federal armies to succeed so soon as they did, many thousand lives were saved, and many millions of dollars were economized, the members of the telegraph service suffered, as a rule, nearly as many discomforts as the soldiers themselves, and in a large number of cases quite as much even to exposure in battle, whereby they incurred serious injury or disease incident to such exposures resulting in death to probably fifty members and in imprisonment in Andersonville, Libby, Oahawbaar or other cruel bastiles of more than one hundred of its members; and

Whereas, Many members were at times liable if captured to be treated as spies owing to lack of military status; and

Whereas, Congress has never considered the services and sufferings of the military telegraph employees, nor yet been solicited to do so, and hence they have not been regarded as other than mere civilians, have had no share in the rewards so liberally bestowed upon the army; now therefore be it resolved,

First—That we appoint a committee of six, of which the president shall be chairman *ex-officio*, to prepare such petition or petitions to the next session of the Congress of the United States as may be thought proper, asking suitable and proper legislative recognition of the services of the military telegraph corps during the war of the rebellion, said committee to have full power.

Second—That such recognition should include an acknowledgment that a military status was due the non-commissioned members of the corps during their service therein, and pensions and other rewards should be granted those members of the corps who should have been commissioned the same as they were given to officers in the army, and the rest should be placed upon the footing of the common soldier, such pensions, etc., to be granted under the same terms and conditions only as members of the army or privileged thereto.

Third—When bounty has been refused an operator because he obeyed orders detailing him from the ranks for the purpose of serving in the telegraph corps it should be paid him.

Fourth—Operators and other members of the corps who were captured while attending their duties and refused pay for the term they were in rebel prisons should be paid for their full time.

Fifth—Operators detailed from the ranks to enter the telegraph service should be allowed the same pay as those of the same grade or class were paid who were taken from the army.

Sixth—The general government should in common justice to its war telegraphers obtain some data of that service other than the quartermaster's pay roll, which is all that is to be found.

The President appointed as the committee provided for by the resolutions: George C Maynard, Washington, D. C.; W. B. Wilson, Lancaster, Pa.; Edward Rosewater, Omaha; Col. W. L. Gross, Springfield, Ill.; T. A. B David, Pittsburgh; Col. J. C. Van Duser, Escanaba, Mich.

Telegrams and letters of regret were received from Henry Bowerman, Kennard Station, Nebraska; D. H. Bates, New York; H. P. Darlington, Chicago; C. G. Sholes, Chicago; C. W. Jacques, Chicago; Frank Drummond, Montreal; Edward Von Eye, Lake Charles, La.; J. Newton Crittenden, Chicago; A. T. Brennan, Cumberland, Maryland; Moreland, Pittsburgh; De Martyn, D. A. Williams, Kansas City; A. M. Nichols, Grand Rapids, Michigan; G. B. Corrlam, Madison, Ind.; James R. Clark, Berrian Springs, Mich.; T. A. B. David, Pittsburgh; M. C. Bristol, Chicago; W. H. Eckman, Cleveland, O.; J. G. Mason, Moberly, Mo.; E. B. McNairn, Longment, Colorado; John C. Van Duzer, Escanaba, Mich.; Thad. M. Schuele, Des Moines, Iowa; A. L. Baker, New York; W. H. H. Lancaster, Earlham, Iowa; B. B. Glass, Joliet, Ill.; L. H. Korty, Omaha, Neb.; W. H. Woodring, Kansas City, Mo.; George W. Perkins, Pittsburgh; M. H. Koerner, New York; J. F. Ludwig, Burlington, Iowa; A. C. Schnell, Ureford, Kansas The reading of the following letter, which was of absorbing interest to the society, provoked three cheers and a tiger for Major-General Sherman:

HEADQUARTERS ARMY OF THE UNITED STATES,
WASHINGTON, D. C., Aug 31, 1882.

R. B. Hoover, Mansfield, O.

DEAR SIR,—I am always glad to hear testimony to the services of the young gentlemen who had charge of the military telegraph during the civil war. They were, as a class, so far as they fell under my observation, most efficient, clever and worthy. As a matter of course, but few of them were personally near me, and to these I have given the highest testimonials. The greater number were distributed along the line, had to work day and night, and were as much a part of the army as though with muskets in the ranks, for before the discovery of the magnetic telegraph the sending of messages back and forth, to and fro, was always done by armed cavalry messengers and escorts, consuming a large portion of the active army. In fact, there should have been in the civil war a regular corps of telegraph operators with regular muster rolls, so that the wounded and disabled could be entitled to the same pensions as other staff soldiers and officers. Whether it is now too late or not, I do not know, but I will take pleasure in aiding you to correct this mistake at this late day, if it be practicable; but this will need a law of Congress, so that you do well to interest spectators and representatives in your scheme. With great respect,

Your friend,

W. T. SHERMAN, General.

Considerable significance was attached to the letter of General Sherman, and as one who knew the General intimately well during the war, Mr Parsons, of Batavia, remarked that the promise made was one which could be depended upon as reliable and sincere. The Secretary was directed to convey to the General an appropriate expression of the appreciation of the society for the sentiments contained in the letter.

An election of officers was held with the following result:

President—W. R. Plumb, Chicago.

Vice-President—Col. J. R. Gilmore, New York.

Secretary and Treasurer—James Pettit, Chicago.

Executive Committee—C. D. Hammond, Albany; Wayne H. Parsons, Batavia; William G. Fuller, Galliopolis, O.; L. D. Parker, Chicago; A. B. Hoover, Columbus, O.; William B. Somerville, New York.

O. H. Dorrance, Wallace, Kan., C. D. Hammond, Albany, and Wm. B. Wilson, Lancaster, Pa., were appointed a committee to confer with the committee from the Old Timers, to select a time and place for the next meeting. They named Chicago, and the report was approved. The president was authorized to fix the date, the same not to be later than the third Wednesday in September.

The Secretary was authorized to procure a suitable album, and solicit the photographs of the members of the military corps, accompanied by their autographs.

A resolution was adopted extending thanks to the officers for the efficient and faithful discharge of their duties, and to the proprietors of the International for kindnesses and courtesies extended. The committee appointed to petition Congress was authorized to incur such an expense as was necessary to prosecute their work. The society then adjourned.

Who the Bareheaded Man Was.

A bareheaded man with big head and a pleasant, clean-shaven face, rushed into the *Times* office one night last week and asked one of the clerks if the Edison lights were burning all right. The man had no coat or vest on. His shirt sleeves were rolled up to the elbow, and his collar had been cast aside. He rushed out again on receiving an affirmative answer to his inquiry. The next night the same man came around with a party of friends. He had his coat and vest on this time, and one could not help noticing the capacious size of his oil-bespattered white felt hat. He was smiling and smoking a fragrant Havana cigar. His companions critically examined the tiny glass globes and the luminous horse-shoes inside, and asked the clerk how they were burning. "All right," replied he, laughing, "but they went out and left me in darkness for about three seconds last night." "That's your doing," exclaimed one of the visitors, turning to the man with the big white hat. "You'll have to blame Mr. Edison, here, for making experiments with his light." The big-headed man was Prof. Edison. He drops in every now and then and asks questions. Sometimes he rushes in bareheaded from his workshop, and sometimes he comes in leisurely with a cigar in his mouth. Outsiders often recognize him, and crowd into the counting-room to get a good look at the big head and genial features of the eminent American inventor.

Improvements in Secondary Galvanic Batteries.

Amongst the many practical or unpractical proposals for the construction of secondary batteries, must be included the following:

The electrodes, formed of spirally-coiled polished plates or wire brushes, *e.g.*, of silver, plunge into a vessel filled only to a little depth with water, but chiefly with oil. The oil is to form a badly conductive coating upon the electrodes, so that the cell may charge itself electrostatically. For the electrodes may be substituted baskets filled with coke, or two strata of coke separated from each other by wadding. —*Weidemann's Beiblätter.*

On Secondary Batteries, with Special Reference to Local Action.

PAPER READ BY DR. GLADSTONE, F. R. S., BEFORE SECTION A, LONDON, FRIDAY, AUGUST 25.

The high hopes that were originally entertained of the Planté battery and its various modifications have scarcely been realized as yet, and one main cause of this is to the extent to which their efficacy is apt to be reduced by local action. The positive element is always metallic lead, the negative element peroxide of lead, and the binary liquid dilute sulphuric acid. Now the peroxide of lead, which constitutes the negative plate, is itself supported by a sheet of lead, and both are immersed in acid. Voltaic action necessarily takes place, therefore, between the elements of which this plate is composed; the lead is converted into sulphate of lead, while the peroxide is reduced to protoxide, which immediately combines with some of the excess of acid to form sulphate of lead and water. As however this insoluble salt is produced on the surface of the metallic sheet, and of the peroxide crystals, a barrier to further action is speedily formed; but, as the amount of force which can be obtained from one of these cells depends upon the amount of peroxide that is capable of being reduced, the value of the cell is *pro tanto* diminished This local action may have taken place to a great extent without its being recognized. On joining the negative and positive plates, the current that instantly ensues is of almost the full strength, and the electromotive force is still 2.0 volts, or thereabouts. It is only when the cell has been allowed nearly to exhaust itself that the loss of power through the destruction of the peroxide makes itself evident by the smaller amount of work done.

This local action is not stopped, though it is probably diminished, by the discharge taking place between the negative plate and the positive one. It takes place also during the formation of the cell, as is evidenced by an absorption of oxygen greater than would be required merely for the oxidation of the minium used in Faure's process, and by the continuous absorption of a small quantity of oxygen for days after the main action is complete.

This defect of the existing secondary batteries is probably to be overcome by some modification of the elements employed in their construction.

New electric lights have recently been introduced at the British Museum. Four Siemens lights have been placed in the reading room, and been so adjusted as to equalize the light over the whole room. They will remain in operation from the 1st of September until the 1st of April.

Electricity in a Brewery.

A curious case of electrical generation by friction was recently brought before the German Electro-Technical Union by Dr. Werner Siemens, of Berlin. It was observed in a brewery in that city, and caused considerable alarm amongst the workmen. The brewery building is constructed of stone and iron, and the floor is laid with asphalt. In the upper story is a malt cleaner from which the malt passes by an iron shoot to the floor below, where it is received in wagons for distribution thoughout the works. When the cleaner remained in action for some time the friction of the malt on the iron shoot generated electricity, which produced a continuous stream of sparks. The malt itself crackled, and sparks flew from it to the hands of the workmen. When Dr. Siemens was called in to investigate the phenomenon, he showed how the asphalt floor insulated the malt room from the rest of the building, so that it became a large Leyden jar charged by the electricty generated by the friction of the malt rubbing on the iron shoot and on itself.—*Engineering.*

The Electric Light in Holland.

We have at length had the opportunity to get wholly acquainted with the Edison Electric Light. A. W. Krasnapolskij in Amsterdam has the reading-hall of his restaurant lit with Edison's incandescent lamps, in the billard-room and the garden, however, Jablochkoff's candles are still used. We are therefore able to draw a comparison between those two systems, and the result is as follows: Edison's lamps burn steady with a bright yellow flame, while the Jablochkoff candle spread a varying (rosy) red light; beside where the Jablochkoff is used for the whole evening, the commutators must be changed now and then, which makes the light nearly go out sometimes. Among the favorable points in Edison's simple system is that it is not too brilliant for the eyes, being nearly the same color as gas, but stronger and steadier. Gramme machines are used.

We have come to the conclusion that when the Edison light is introduced here, and subscribers can be provided with it at least as cheap as gas (from a central office, the same as New York City), the Edison lamp will be introduced in the same way, and will be as universally used as the Telephone is to day.

C. W. H. V.

Amersterdam, Holland, Sept. 19th, 1882.

A fact brought out by the British Postmaster-General's annual report is that during the last fiscal year the United States sent Great Britain 9,500,000 newspapers and received from her 7,500,000. This shows that American newspapers may claim a great as well as growing transatlantic circulation; and upon the whole the British journals do certainly display more knowledge of America and American affairs than they did some years ago. They no longer fancy Chicago to be a rendezvous of savages, nor suppose the Greenbackers to be so called from the color of their garments.

Electric Lighting.

We lately had occasion to allude to the merits of the Edison electric lamp, as tested during a three months' cruise on a steam vessel. The rapidity of the movement by which the electric system is supplanting gas may be marked by the fact that a ship or a building which, on the 1st of June last, was fitted with the most improved system then in vogue, will now have to be refitted with still later improvements to keep step with the times. Instead of generating the current by putting the electric engine in motion whenever lights are required, the electricity may now be generated at convenience and stored in boxes until required for use, thus doing away with the annoying noise of the electric engine at night. This system is now in operation upon two of the passenger steamers running across the English Channel between New Haven and Dieppe. The Edison lamp is used in connection with what is known as the Faure accumulator for storing the electricity. Having once pumped the accumulators full, the running of the generating engine for an hour a day is all that is required to keep fifty lamps of sixteen-candle power each in full operation for the six hours' passage from harbor to harbor. The Normandy and Brittany, the two new and fine steamers of that line upon which it has been in operation, present a marked contrast to the darkness and discomfort of the old-fashioned boats which have so long made the passage between Calais and Dover such a purgatory to travelers.—*New York Herald.*

Electricity vs. Gas.

The success which, after some years of patient study, has at length rewarded Mr. Edison's efforts to adapt electricity to the purposes of general illumination will be welcome news to all but such as are interested in the prosperity of existing gas companies A little in advance of the time in which Mr. Edison finally perfected his work, Dr. Siemens, the illustrious English electrician, paid public homage to electricity as the coming illuminator. Practical proofs had also been given in London, Paris, and elsewhere, that the new light had been at last reduced under satisfactory control and supplied at a rate which could not fail to prove highly injurious to all existing gas monopolies. In fact it has already done so on no inconsiderable scale abroad, in connection, especially, with railway stations, ocean and other steamers, factories, printing establishments, churches, theatres, concert-rooms, warehouses, museums, &c., and is now at length successfully introduced in the streets of the largest cities of Europe and America. In New York, it is said that the electric light has become so generally popular that in many private houses gas has been entirely dispensed with and the meters sent back. We trust soon to see the same thing in Canada, and as a move in that direction, some Montrealers have just left to make final arrangements with the Edison Company to introduce the system here. These gentlemen have gone on their mission just at the right time. The public here, ever ready to get rid of the incubus of its local gas company, is especially so at this moment, when public demonstration has just been made, through our Stock Exchange and otherwise, of the immense profits of this giant monopoly. We trust to see local electric companies in early operation here, and gas turned off wherever it is possible to use the new light. Such is the sole method to teach the gas company that exorbitant rates will no longer be endured, and we hope the lesson will be very thorough and come too late to be taken advantage of.—*The Shareholder, Montreal.*

Wires in New York.

One of the industrious reporters of *The Sun* has been inquiring into the subject of telegraph wires, and he gives the following summary of his observations:

"More than two hundred telegraph wires cross Broadway at Fulton street, roofing over the great thoroughfare as with a giant cobweb. There is in New York a constantly growing host of corporations whose wires form networks of this sort, in most places upheld by rough hewn poles. Among these are ten telegraph companies, and a score of electric lighting, telephone, burglar-alarm companies. Very many big business establishments own private wires. Of all the concerns who use the streets in this way only the police and fire telegraph systems are public establishments. The almost innumerable wires belonging to all these companies necessitate frequent attention. Frequent changes in the systems produce wires that, though left standing, are disused. These are called dead wires. Each company keeps a chart of its wires, and whenever the use of any wire is discontinued the fact is noted on the chart, so that when occasion requires it the wire may be used again. When old wires are replaced by new the old wire is collected and sold. One thoughtful member of the Farmer's Club has bought hundreds of miles of this old wire, which he uses for training grapevines. The line men of the different telegraph companies are on the alert not only for dead wires, but for what are called skin wires, that is, wires which are put up without authority. Whenever these are discovered they are unceremoniously cut down. Where they come from or who puts them up it is sometimes impossible to tell. They make their appearance frequently, and it is no small part of the linemen's duty to look out for them."

Edison Light Fixtures for Houses—A Large Factory Bought.

The manufacturing of house fixtures and appliances for the Edison light has rapidly developed into a large business. Messrs. Bergmann & Co., mentioned in the last *Bulletin*, are at present foremost in this new enterprise. Finding their present shops, No. 108 Wooster street, too small to keep pace with their orders, they have just purchased the large factory of the United States Electric Light Company, located at the corner of Avenue B and East Seventeenth street, together with the entire plant of boilers, engine, shafting, etc. The building, elaborately equipped by the United States Company for the manufacture of Maxim lamps and dynamos, is over 90 feet square, contains 6 floors lighted from all sides, with very high ceilings, has a superficial area of about 50,500 square feet, and contains two large tubular boilers, a Corliss engine of 150 horse-power, a large Knowles steam pump, a Worthington duplex steam pump, a pressure tank, elevator, a six-ton Howe platform scale, complete water, steam and heating apparatus, main jack shafting on each floor, including pulleys and belts, also two complete lines of shafting on each floor with pulleys for running lathes, presses, machines, etc., together with all gas and office fixtures, railing, shelving, etc., all of which have been sold by the United States Company to Messrs. Bergmann & Co. They will at once take possession, and, by an arrangement with our company, manufacture Edison fixtures and appliances on a scale commensurate with the progress of the Edison light.

Electrical Engineering.

The Hammond Company Electrical Engineering College, at 2 Red Lion Square, was opened last Wednesday for its first session, after an introductory speech by Mr. Robert Hammond. We hear that the College starts with twenty-five pupils. Mr. H. E. Harrison, B. Sc., is the principal.—*London Electrical Review.*

Amsterdam, Holland.—A Cafe Lighted.

A plant of sixty Edison lamps was started July 7th, in the grand café of Messrs. Krasnapolsky & Company, Amsterdam. This restaurant is one of the largest in Europe, and is visited by two thousand people daily. The light gives satisfaction, its brilliancy and steadiness being in marked contrast with the dull and flickering gas in an adjoining room which opens into the café with large folding doors.

Miscellaneous Notes and Facts.

Mr. John J. Dickey, superintendent of the Western Union District from Omaha to Salt Lake, called at 195, on the 19th, and was shown through the office by Manager Daly.

One of the best known men in Wall street is Senator John J. Kiernan, the telegraphic news man, corner Wall and Nassau streets. Many of the leading Wall street men may be seen there.

The wires were connected from San Francisco, Cal., to Tor Bay, Nova Scotia, on the night of the 20th, and worked well; this is a circuit of a thousand miles longer than from Boston to Chihuahua, Mexico.

Mr. Newton, formerly chief operator at Cincinnati with the Mutual Union, and chief operator at Long Branch during the summer, has returned and taken a position at 195.

A Portuguese Cable.

LISBON, Sept. 19th, 1882.—A contract has been signed between the Portuguese government and M Braam, for the laying of a cable between Lisbon and the United States, touching at the Azores.

Underground Telegraphy.

The Underground Telegraph Pipe Manufacturing Company has just been organized with the following officers: President, Wright Duryee; Vice President, D. R. Mangam; Treasurer, A. V. Stout; Secretary, Paul P. Todd. The Board of Trustees comprises Samuel C. Harriott, John H. Wagdell, and W. M. Wacton.

Quick Returns.

The Eastern Telegraph Company are said to be realizing by the war in Egypt a daily revenue of £6,000. This income is derived exclusively from the dispatches—official and press—sent from the headquarters of the army on the Canal and from Alexandria. Until the outbreak of the war there was no direct telegraphic communication between Port Said and Alexandria. The Eastern Company laid a cable from Alexandria to Port Said, at a cost of £24,000, and this sum was paid off by the revenue of four days.

New Telegraph System.

The new Southern Telegraph Company, a part of the Baltimore and Ohio system, has completed its wires from Washington to Richmond, and will to-morrow open regularly for business. The lines are built in the most substantial manner, entirely different from other opposition lines put up in the South during the past four years. As rapidly as possible the new company will extend its lines to Norfolk, Charleston, Savannah, Augusta, Atlanta Montgomery, Mobile, New Orleans and all the principal cities of the South. A line will also be built to connect Louisville with the new Southern system *via* Nashville and Chattanooga.

Telephone Litigation.

The case of the Canadian Telephone Co. *vs.* The Toronto Electric Despatch Co. was heard this week in the Chancery Division of the High Court of Justice, at Osgoode Hall, a perpetual injunction being granted against the defendants, thus establishing invalidity of the Bell Telephone patent, already sustained by the Quebec Courts in a test case.

Telephone Company Enjoined.

TRENTON, N. J., Sept. 19, 1882.—Chancellor Runyon, of New Jersey, at the instance of the Mutual Union Telegraph Company, to-day granted an injunction restraining the Telephone Company from making any discrimination in the telephone service rendered to that company and to the Western Union Telegraphing Company. The companies operating telephones through the country have claimed that under the terms of their contract with the parent company owning the patents they could not permit any telegraph company, excepting only the Western Union, to receive messages by telephone for further transmission by telegraph. This has practically given the favored company a monopoly of the telephone wires for the purpose, which monopoly will now be destroyed.

An Affidavit by Telephone.

John Freeman, assistant book-keeper in the Department of Public Works and notary public, before whom the various foremen are required to swear that the pay rolls submitted by them are correct, took the affidavit of William Inness, foreman of repairs at the crib, by telephone. Having called the crib, the following colloquy ensued:

"Is this William Inness?"

"Yes."

"I hold in my hand the pay roll submitted by you for the month of August. Are you willing to swear that it is correct?"

"I am."

"Take off your hat and hold up your right hand."

"I have done so."

"You solemnly swear that the August pay roll for repairs at the crib is correct?"

"I do."

Mr. Freeman readily distinguished Mr. Inness's voice, and says an oath taken by telephone is binding by law.—*Chicago News.*

Recent Progress in Telephony.

To the Editors of the Electrical Review:

SIRS,—On reading the paper, in last *Electrical Review*, as read by Mr. W. H. Preece, on "Recent Progress in Telephony," before the British Association, I was struck with the similarity of an experiment, and even the use of the very words, as was done and used by an old friend of mine thirty years ago. The words I refer to are put in italics in your report, and are: "*to communicate across seas and channels without the aid of wires at all.*" This individual was a Mr. J. B. Lindsay, of Dundee, a man who was evidently born fifty years too soon; devoted a great portion of his time to electric lighting and telegraphy; demonstrated the practical possibility of seending needle deflections across large bodies of water, across the docks at Dundee in 1848, and 1850, across the Tay at Perth and the Dee at Aberdeen. In 1859, at the latter city, Mr. Lindsay endeavored to demonstrate his system before the British Association then assembled there, but was barely listened to, and laughed at as a visionary.

With your permission I will be glad to give more about this uncommon man's many electrical ideas—ideas which have since become realities.

I am, &c.,

G. LOWDON, Electrician.

The tremendous motive power required on American railways has cost $164,450,000, the number of locomotives being 20,116. What an exhibition of the wonderful achievement of the world during the last quarter century it would be were these locomotives to be placed in line and moved together across the continent!

Telephone Meetings.

THE NATIONAL BELL TELEPHONE COMPANY OF MAINE DECLARES 4 PER CENT.; THE BOSTON AND NORTHERN COMPANY 3 PER CENT. QUARTERLY DIVIDEND—TREASURER GILDEN'S STATEMENT.

BOSTON, Sept. 20, 1882.—A meeting of the directors of the National Bell Telephone Company of the State of Maine was held at the American Bell Company's building in this city, to-day, President Ingham in the chair. Treasurer Glidden's quarterly report states that complete returns from all divisions for the month of August show the net earnings to be $6,190.01, which is at the rate of 16.85 per cent. on the full capital issued, viz.: $454,100.00. Upon these figures as basis the report recommends that a quarterly dividend of 4 per cent. be declared for the quarter ending September 30th. Estimating the earnings of September to be $6,200, the report states there will then be a surplus, after paying the above dividend, and including the reserve fund, of $32,077.62, cash and accounts due. During the month of August the earnings were $1,372.08 more than for January, 1882. At this rate in January, 1883, the earnings will be $2,059.20 more than in January last, or over $24,000 increase per annum.

Following the recommendation of the treasurer's report a quarterly dividend of 4 per cent., payable on or before Oct. 10, was voted by the board.

Upon the adjournment of the National Bell of Maine a meeting was held by the directors of the Boston & Northern Co., President Ingham in the chair. Treasurer Glidden's quarterly report states that complete returns from all divisions for August show the net earnings to be at the rate of 12.37 per cent on the capital. Estimating September equal to August there will be in the office account, after paying 3 per cent. dividend, $15,000. During August the company handled 10.067 trunk messages, an increase of nearly 2,000 over any previous month. On this showing the report recommends a quarterly dividend of 3 per cent.

By vote of directors the above dividend was voted, declared payable on or before Oct. 10th, 1882. A vacancy in the board of directors was filled by the election of Wm. H. Anderson of Lowell. Meeting adjourned.

Pedestrian, who has dropped a penny in front of "a poor, blind man:" "Why, you humbug, you're not blind." Beggar: "Not I, sir. If the card says I am, they must have given me the wrong one. I'm deaf and dumb."

A more suitable appointment could scarcely have been made than that of Mr. Verster, to the charge of the Rotterdam Telephone Exchange. He is familiar with the construction and operation of exchanges, and, besides, an excellent electrician.

War and Science.

The Oriental Telephone Company have received from their representative at Alexandria an extract from an official letter to the Admiralty from Admiral Sir Beauchamp Seymour, who writes as follows: "The telephonic communication which I reported in my previous letter had been established between the Helicon and the British Consulate has proved of the utmost value to me since the outbreak of the *émeute*, and inspired the English residents with a certain amount of confidence, as by its means I have been kept constantly aware of the state of affairs generally. In default of this ready means of communication it would have been impossible for some hours to have gained any information from the town except by special messengers, at imminent risk of life."

A Pocket Photometer.

Mr. Robert Sabine, the well-known electrician, has devised a handy little pocket photometer which will be useful for estimating approximately the intensities of different electric lights. It is based on Ritchie's method, and consists of a telescopic tube having at one end a square box, two opposite sides of which are glazed with squares of opal glass cut from the same sheet. Within this box is a prism, or angle of a prism, made up of two plane mirrors meeting each other at a right angle, the apex of which points up the telescopic draw tube. This tube is fitted with an eye-piece, at the other end, and a small lens, so as to get a good focus in order to see the mirrors plainly. The principle of Ritchie's photometer consists in comparing the intensities of the two lights as reflected on the mirrors (or white card surfaces); and the observer moves until the relative distances between himself and the lights give a sensibly equal illumination of the mirrors. These distances then give the relative intensities of the lights by the law of inverse squares. In Mr. Sabine's photometer the lens and draw tube take the place of the small hole employed by Ritchie; and this requires the tube to be drawn out about 4 inches. Were it not for the lens the tube would require to be much longer in order to get a good view of the mirrors. The instrument is made by Messrs. Elliott Brothers, the well-known opticians.—*Engineering.*

L' Electricite et ses Applications.

PAR HENRI DE PARVILLE, PARIS, 1882.

The book with the above mentioned title may certainly be reckoned among the best of its kind. Among the different articles treated in the volume is, among others, one about the electric light of Edison. Many times the authors of books are partial, *and* write most about the inventions of their countrymen. As long as an American writes a book about inventors he is obliged to do this, for the very simple reason that America is the "country of the inventions." Therefore we appreciate it in the book of Mr. De Parville, that he gives more than forty interesting pages of the Edison lamps. He is right when he says that the system at Menlo Park is "On peut ce qu' on veut." The book is illustrated with 187 woodcuts. The price being moderate, we advise every electrician to give it a place in his library. V.

Rotterdam, Sept. 3d, 1882.

Companies of Electricity.

In the Netherlands two companies of electricity have just started. One with the name of Nederlandsche Electriciteits Maatschappij is formed by some great capitalists in Amsterdam, and has the project to furnish electricity for all purposes and to get concessions for the electric light. The second one in the Hague, called Nederlandsche Maatshcppij voor Electriciteit on Metallurgie purchases the same plan. The statutes of both companies are already legalized by the Government. V.

Telephone Time Signaling Apparatus.

An ingenious, cheap and valuable contrivance has just been patented by J. B. Oram, Esq., of Dallas, Texas, for announcing the correct time at noon each day through the Telephone Exchange service, each subscriber's instrument connected with an exchange is made to announce the correct time instantaneously at noon daily, so that there will be no excuse for keeping clocks and watches out of time. There is no doubt but many exchange managers, for the benefit of their subscribers, will avail themselves of this excellent instrument, which indeed recommends itself in that connection.

The Two Countries.

There is a land of tears and bitter wailing—
A land most like that drear one Dante knew,
Where wan-faced Niobes, with dark robes trailing,
In sad procession move, brow-bound with rue,
It is a land peopled by witless mortals—
Compared with them the Virgins five were wise—
And it is writ above its gloomy portals:
"We Did Not Think it Paid to Advertise."

There is a land that flows with milk and honey—
Not the condensed nor yet the sorghum strains—
Each dweller bears a gripsack fat with money,
Bonds, coupons, stocks, and various other gains.
Happy are these as, at high tide, the clamlet;
No tear doth drown the laughter in their eyes:
For better luck they'd not denote one damlet;
The pastry's theirs—They Learned to Advertise.

The opening of the service of our Telephone Exchange here in Rotterdam took place the first of September. One hundred subscribers out of the 300 are connected. The number of calls were on the first day 276, and on the second day 306, on the whole 582 calls. C. W. H. VERSTER,

Rotterdam, Sept. 31h, 1882. Chief Operator.

We are informed that the British Electric Light Company have recognized the fact of their infringement of the Edison patents for electric lighting by paying a substantial sum as royalty to the Edison Electric Light Company (Limited).

It is asserted that the electric lighting of the Vaudeville, on the Boulevard Montmartre, has far exceeded the expectation of the most sanguine. In a double sense it is a brilliant event. Every night the hall is densely crowded. It seems that the power employed is an 11-horse power gas engine, which, with Faure accumulators, is sufficient to keep 250 Swan lamps in a state of incandescence every evening.

The name of a new book is "Bachelors and Butterflies." It is not until the bachelors get married and go to housekeeping that they find out how the butter flies.

M. H. Geoffroy has brought to the attention of the French Academy of Sciences a specimen of electric lighting wire which seems to answer the purpose of preventing fires. It consists of a copper wire insulated with asbestos and threaded through a lead pipe. According to experiments made in Paris by M. Henri Lippmann, engineer to the Faure Electric Accumulator Company, a sample of the conductor of this wire was entirely volatilized without the leaden pipe being affected. The volatilization takes place in the fraction of a second.

Mexico has produced, with the primitive methods at command, nearly $4,000,000,000 in gold and silver; the Potosi Mines of Peru, $900,000,000; and the United States, $2,600,000,090, the latter being divided as follows: California, $1,148,307,731; Nevada, $469,125,953; Idaho, $61,543,901; Oregon and Washington Territory, $48,687,251; Utah $55,831,848; Arizona, $17,930,175 and the remainder divided among Colorado, New Mexico, Montana, Wyoming and the gold producing States of the South.

The lecturer began: "There is a fortune lying in wait—" Up jumped a bullet-headed fellow in the northeast corner to remark: "Well, I guess you're about right there, mister. There's Bill Jones, the butcher. Three years ago he wan't worth a dollar. He's got a fortune now—got it as you say, by lying in weight." The bullet-headed man said no more, but the lecturer was ill at ease during the entire evening.

David Brooks, Esq., opens the fall session of the New York Electrical Society with a paper on "Electrical Conductors Insulated with Oil," a subject of immeasurable interest at the present time. The Executive Committee have decided to issue shortly the first number of the Society's Journal, embracing this and all other interesting papers which have preceded it. No pains will be spared to make the publication first-class after it gets a start. An effort will be made to secure the use of the elevator for members visiting the rooms of the society.

The facetious article on Comets, the Solar System and their connection with Electricity, as observed by Prof. Doolittle, not received in time for publication in this edition.

"You are as full of airs as a music box," is what a young man said to a girl who refused to let him see her home. "That may be," was the reply, "but I don't go with a crank."

Cetewayo, says London *Truth*, objects to the barbarism of taking different kinds of food on the same plate, and insists upon having his vegetables served separately. What would he think of a beauty at a celebrated watering-place hotel, who had on her plate a roast, two entrées, mashed potatoes, succotash, and several sauces and juices, and then, pointing her jeweled finger at a dish of wine jelly, said to the waiter, "Bring me some of that liver?"

There is a good deal of illusion about the rise of the Nile. It seems to be thought that for a few weeks the delta and the valley of the Nile are a lake and then that they are a muddy swamp. The water of the Nile flows into canals; from thence it is pumped every morning, as long as the rise lasts, into small rills which permeate the fields, which are thus irrigated every morning. The water evaporates every day, leaving in the evening dry mud. Thus, except in some low-lying districts, there never is an expanse of water or mud.

Extension of Electric Railways.

A *Post* telegram from Berlin, dated 22d August, says: "There is a great increase in the construction of electric railways throughout Germany, their success being established."

Chili.—Flour Mill Lighted.

A plant consisting of thirty Edison lamps has been installed near Valparaiso, in the flour mill of Mr. Enrique Lanz, the largest establishment of the kind in Chili. With thirty lamps in circuit, the water consumption is said to indicate less than two horse-power, at a speed of 1,300 revolutions per minute; and with a speed of 1,800 revolutions, they say, they get forty lamps at full 8-candle power. The length of the circuit is five hundred and ten feet. The machine runs thirteen hours each day, and is in charge of an intelligent native miller.

An Electric Machine of Great Size.

One of the largest machines exhibited at the Paris Exhibition of Electricity was the electric machine invented by Van Marum, exhibited by Teijler's Society in Haarlem, Holland. It consists of two parallel running disks of 1.62 meters in diameter, and a gigantic conductor, besides a battery of 25 Leyden jars of 12.6 square meters surface, made in Amsterdam by a Mr. Cuthberson. It got into the possession of Teijler's Collection in Haarlem. Van Marum was the first conservator of the Museum. Two books of the year 1705, giving a description of the machine and an account of the experiments made with it accompanied this interesting machine. V.

Danger from Gas.

Mr. William Crookes, F. R. S., London, says that with the use of gas, "the ceilings get blackened, the curtains are soiled with soot and smoke, the decorative paint-work is destroyed, the gildings tarnished, the bindings of the books rotted, and the air of the room is not cool and fresh, but vitiated by the hot fumes from burnt, or semi-burnt gas." * * * The London *Times*, July 8th, reports that the base of a big gas lamp at the bottom of Preston New Road, Blackburn, blew up July 7th, with a loud report. The lamp leaked and exploded when it was lighted. Surrounding buildings were shaken and huge stones hurled thirty feet into the air. Mr. Whittaker was killed, Mr. Beardwith and Mr. John Fielding were dangerously injured, and others passing by were slightly injured. This gas lamp had been set up to complete with the electric light * * * The President of the Royal Society in his evidence before the Parliamentary Committee, at London, has recently stated that he likes the electric light because it saves his fixtures and books from disfigurement and does not befoul the atmosphere. * * * A gas explosion took place in a café in Paris, July 12th, killing over twelve persons and wounding nearly fifty, including a commissaire of police, a captain of the firemen, 17 firemen of the rank and file, and several sargents de ville. Early in the morning an escape of gas was noticed followed by a slight explosion.

The proprietor of the café, where it took place, instantly started to have the matter attended to. Hardly had he gone when a terrific explosion occurred in the cellar, blowing the whole of the building to atoms. * * * Mr. Griswold, the *Times* says, thinks the fire, August 16th, in his hotel at No. 10 Thirtieth street, New York City, was caused by gas leakage. * * * C. D. Miller was found July 6th, in a dying state on his bed in the Cosmopolitan Hotel, New York City, suffering from asphyxia caused by inhaling gas and the gas was found turned on. * * * Mr. Wright, receiving teller of the Mechanics National Bank, Wall street, New York, was knocked down and burned on the face and hands August 3rd, by an explosion of gas which had escaped and filled the spaces between the doors of the bank vault which Mr. Wright was opening with a candle in his hands. * * * William Henry Preece, F. R. S., in an article on the "Age of Electricity," published in the May number of *Times*, London, speaks as follows of the objections to gas:

"The objections to gas are very serious. In the very act of producing light it also produces water, and this water is found of great detriment to delicate objects that are exposed in shop windows. It not only produces much heat itself, but it throws into circulation the heated product of combustion. It also produces various gaseous acids which act injuriously upon gilded ornaments, and the ornamental bindings of our books and picture frames, and which are sadly detrimental to the air we breathe. It hastens the decay of many materials, and its influence on brass is well known in the frequent falling of pictures when they are hung by means of brass wire. Again, its fitfulness or variation is destructive to the eyes, so that constant writing, reading or studying by its means has proved injurious; in fact, it is questionable whether it has not led more to shortsightedness than any other known cause. It, moreover, introduces into our houses a certain source of danger, taps are left unturned, meters get out of order, gas escapes into our rooms, and when it mixes with air in certain proportions it produces one of the most explosive agencies known, and wrecked houses and lost lives witness to this unfavorable side of the use of gas."

NEW PATENTS—ELECTRICAL—1882.

INDEX OF INVENTIONS FOR WHICH LETTERS PATENT OF THE UNITED STATES WERE GRANTED IN THE WEEK ENDING AUGUST 29TH, 1882.

263,491. Alarm for the Telephone. William Dent, Utica, N. Y. Filed Aug. 27, 1882. (Model.)

263,586. Carriage for laying Multiple-Wire Telegraph Cables in Pipes. Nicholas M. Rittenhouse, Baltimore, Md. Filed Mry 24, 1882. (No model.)

263,627. Conduit for Electric Wires. Russell Thayer, Philadelphia Pa. Filed Feb. 8, 1882. (No model.)

263,622. Device for Forming Loops in Terminal Wires for Electric Lamps. Alfred Swan, Gateshead County of Durham, England. Filed July 20, 1882 (No model.) Patented in England, June 19, 1882, No. 2,898.

263,623. Device for Forming Terminal Wires for Electric Lamps. Alfred Swan, Gateshead, County of Durham, England. Filed July 20, 1882 (No model.) Patented in England June 19, 1882, No. 2,898.

263,353. Electric Motor. Désiré Thomas Piot, Great Titchfield Street, County of Middlessex, England. Filed May 17, 1882. (No model.) Patented in England Nov. 5, 1881, No. 4,851, and in France May 2, 1882.

263,404. Electric Arc Lamp. Charles Heisler, St. Louis, Mo. Filed Mar. 28, 1881. (No. model.)

263,457. Electric Gas-Lighting Apparatus. Osmon S. Armstrong, Cambridge, Mass. Filed July 2, 1881. (Model.)

263,651. Galvanic Battery. Charles E. Buell, New Haven, Conn., assignor of one-half to Julius H. Appleton, Springfield, Mass. Filed Mar. 10, 1880. (No model.)

263,621. Mold for Forming the Stems or Closing-Pieces for the Bulbs or Globes of Incandescent Electric Lamps. Alfred Swan, Gateshead, County of Durham, England. Filed July 20, 1882. (No model.) Patented in England June 19, 1882, No. 2,898.

293,554. Switch for Grounding Telephone or Telegraph Lines. Benjamin McCabe, Charles R. Swain, and James T. Sutton, Peekskill, N. Y. Filed May 27, 1882. (No model.)

263,336. Telephone-Case. Oscar D. Hartwell, Nashua, N. H. Filed May 5, 1882. (No model.)

263,524. Telephone Exchange System. William W. Jacques, Boston, Mass, assignor to the American Bell Telephone Company, same place. Filed May 22, 1882. (No model.)

263,526. Telephone-Dummy. Charles R. Jennison, Boston, Mass., assignor of two-thirds to William A. Macleod and Milan F. Stevens, both of same place. Filed May 19, 1882. (No model.)

FOR WEEK ENDING SEPT. 5TH.

263,862. Automatic Telephone Exchange. M. Daniel Connolly, Philadelphia, Pa., assignor to Spencer D. Schuyler, New York, N. Y. Filed Oct. 29, 1881. (No model.)

BROUGHT FORWARD WEEK ENDING SEPT. 5TH.

264,042. Apparatus for Treating Carbon Conductors. Hiram S. Maxim, Paris, France. Filed Feb. 18, 1882. (No model.)

263,827. Bracket for Incandescent Lamps. Edward Weston, Newark, N. J., assignor to the United States Electric Lighting Company, New York, N. Y. Filed Feb. 18, 1882. (No model.)

263,828. Bracket for Incandescent Lamps. Edward Weston, Newark, N. J., assignor to the United States Electric Lighting Company, New York, N. Y. Filed Feb. 19, 1882. (No model.)

263,829. Bracket for Incandescent Lamps. Edward Weston, Newark, N. J., assignor to the United States Electric Lighting Company, New York, N. Y. Filed Feb. 18, 1882. (No model.)

263,759. District-Telegraph System. Charles E. Buell, New Haven, Conn., assignor of two-thirds to James G. Smith, Hackensack, N. J., and George W. Coy, Milford, Conn. Filed June 6, 1881. (No model.)

263,700. Electro-Medical Induction-Coil. Thomas H. Hicks, London, Ontario, Canada. Filed Apr. 20, 1882. (No model.) Patented in Canada Sept. 23, 1880, No. 11,802.

253,801. Electric Lamp. Joseph V. Nichols, Brooklyn, assignor to the United States Electric Lighting Company, New York, N. Y. Filed Feb. 6, 1882. (No model.)

263,878. Electric Lamp. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Dec. 18, 1880. (No model.)

263,938. Electric-Arc-Lamp. Jean Auguste Mondos, Neuilly, Seine, France. Filed Jan 6, 1882. (No model.) Patented in France Nov. 11, 1881.

264,006. Electric-Arc-Lamp. Edward Weston, Newark, N. J., assignor to the Weston Electric Light Company, same place. Filed Oct. 6, 1880. (Model.)

263,780. Machine for Winding Armatures for Magneto-Electric Machines. Robert Haase and John P. Recker, Indianapolis, Ind., assignors to themselves and Thomas C. Moore, Joseph A. Moore, and Robert Connelly, all of same place. Filed Aug. 23, 1881. (No model.)

263,973. Mechanical Telephone. Francis R. Shaw, Chatham Centre, Ohio. Filed July 11, 1882. (No model).

263,757. Process of and Apparatus for Straightening Carbon Rods. Charles F. Brush, Cleveland, Ohio. Filed June 4, 1881. (No model.)

263,758. Process of Baking Carbon Rods. Chas. F. Brush, Cleveland, Ohio. Filed May 27, 1881. (No model.)

263,830. Process of Manufacturing Carbon Conductors. Edward Weston, Newark, N. J,, assignor to the United States Electric Lighting Company, New York, N. Y. Filed Sept. 7, 1881. (No model.)

263,870. Regulator for Dynamo-Electric Machine. Achille Khotinsky, St. Petersburg, Russia. Filed May 1, 1882. (No model.) Patented in France, Jan. 10, 1882, No. 146,790; in Belgium, Jan. 11, 1882; in England Jan. 17, 1882, No. 245, and in Spain Feb. 7, 1882, No. 2,623.

263,885. Regulator for Electric Lights. Frederick K. Fitch, New York, N. Y. Filed Feb. 15, 1882. (No model.)

263,756. Secondary-Battery Element. Charles F. Brush, Cleveland, Ohio. Filed June 13, 1882. (No model.)

263,926. Telephone-Signaling Apparatus. Henry B. Pytle, Boston, Mass. Filed June 2, 1882. (No model.)

264,028. Telephone-Transmitter. Léon D. Locht-Labye, Liege, Belgium. Filed Apr. 20, 1882. (No model.) Patented in France Aug. 30, 1879, No. 132,464; in Belgium, Apr. 21, 1881. No. 54,442; in Portugal Nov. 25, 1881, No. 723; in Sweden Nov. 28, 1881, and in British India Dec. 31, 1881, No. 1,146.

REISSUES.

10,193. Duplex Telegraph. Georges D'Infreville, New York, N. Y., assignor to the Western Union Telegraph Company, same place. Filed Apr. 17, 1882. Original No. 238,094, dated Feb. 22, 1881.

A printed copy of the specification and drawing of any patent published herein, also of any patent issued since 1865, will be furnished by any of the patent solicitors whose advertisements appear in this journal. In ordering, please state the number and date of the patent desired.

Pennsylvania Railroad Officers.

It was officially announced at the office of the Pennsylvania Railroad that the changes in the organization of that company, concerning which rumors have been in circulation of late, will take effect on the 1st of October. These changes are consequent upon the retiremeut of Mr. A. J. Cassatt from the First Vice-Presidency, which office he has held since the death of the late Col. Thomas A. Scott. Under the reorganization the officers will be as follows: George B. Roberts, President; Edmund Smith, First Vice-President; Frank Thomson, Second Vice-President; J. N. DuBarry, Third Vice-President; John P. Green, Fourth Vice-President; Charles E. Pugh, General Manager. Mr. Smith, although advanced to the First Vice-Presidency will retain supervision of the financial department of the company. Mr. Thompson will succeed to the duties performed by Mr. Cassatt as the company's executive officer, which particularly embraces the management of the pas-enger and freight departments, the supervision of transportation, special charge of the relations of the company with competing and connecting lines and special supervision of the receipts and disbursementt of all the lines operated and controlled by the railroad. In June, 1864, Mr. Thomson entered the service of the Pennsylvania Railroad as Superintendent of the Eastern Division of the Philadelphia and Erie Railway, in 1873 was appointed Superintendent of Motive Power, and the following year was appointed General Manager of the Pennsylvania Railroad lines, succeeding Mr. Cassatt, who was appointed Vice-President, and while occupying that position instituted numerous improvements. The career of Mr. Thomson with the Pennsylvania Railroad is an illustration of the standing rule of that company that every one of its employes stands in the line of promotion, future advancement being dependent solely upon the individual's own efforts and capabilities.

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Third Test.—Red bull's-eye, 5 inches in diameter, and red hand lantern. At a distance of 1,383 yards, red light of hand lantern disappeared, and, at a distance of 1,898 yards, bull's-eye was well in sight.

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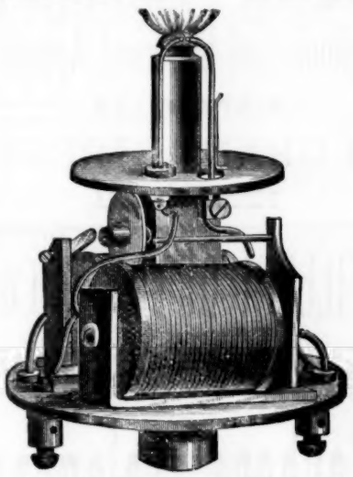

Patented May 31, 1881; April 25, 1882; May 2, 1882.

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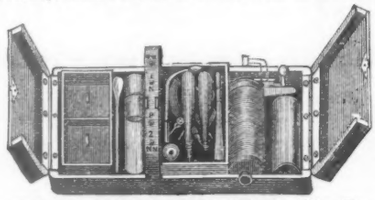
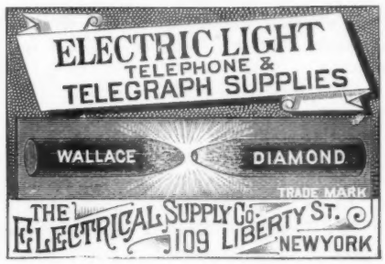

Awarded First Medal at Cincinnati Exposition, 1880.
36 John Street, New York.



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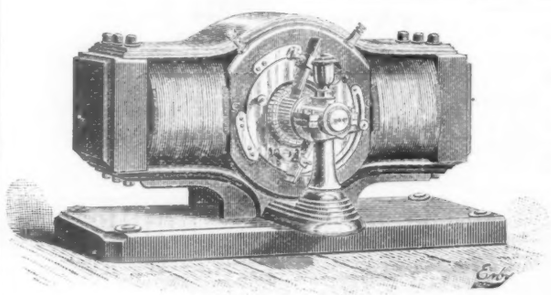

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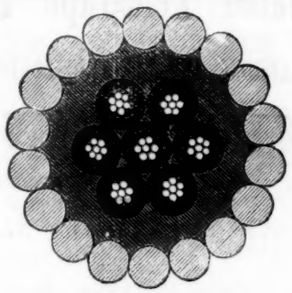

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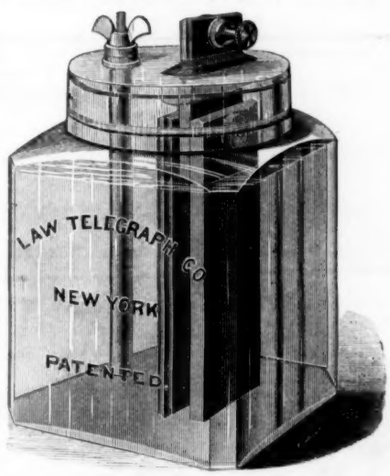

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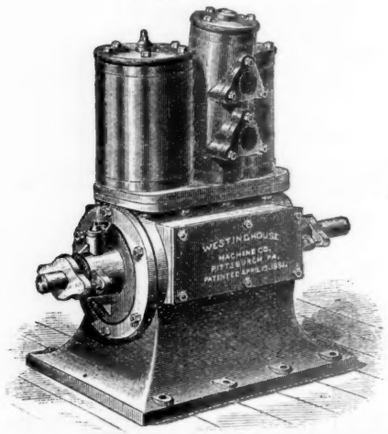

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